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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,308	10/31/2003	Liann-Be Chang	MR3029-31/DIV	9879

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ROSENBERG, KLEIN & LEE
SUITE 101
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ELLICOTT CITY, MD 21043

EXAMINER

TRAN, THANH Y

ART UNIT PAPER NUMBER

2822

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,308

Applicant(s)

CHANG ET AL.

Examiner

Thanh Y. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/15/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, and 19-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al (U.S. 5,739,552) in view of Kopf et al (U.S. 5,115,441).

As to claim 17, Kimura et al discloses in figure 5b a structure of a LED device comprising: a LED substrate (20) having a GaP layer (10) thereon; a transparent layer ["(Zn-doped) GaP layer" 11] grown by a liquid phase epitaxy grown ("LPE") process having Zn dopants therein on the GaP layer (10) of the LED substrate (20) (see col. 10, lines 55-60; and col. 12, lines 21-30). Applicant should note that: GaP is known as a transparent material (see col. 1, lines 60-61 in cited reference of Akaike et al (U.S. 6,528,823).

Kimura et al does not disclose the transparent layer is composed of a semiconductor compound excluding GaP.

Kopf et al (U.S. 5,115,441) discloses in figure 1 an apparatus having a transparent layer (23) composed of a semiconductor compound excluding GaP ("transparent semiconductor material ... is selected from the group consisting of cadmium tin oxide and indium tin oxide" that excludes GaP material, see claim 2). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kimura et al by replacing the transparent layer that is made of a material of a semiconductor

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compound excluding GaP as taught by Kopf et al for providing a desired conductivity, light transmissivity, and absorption range (see claim 1 in Kopf et al).

Furthermore, the limitation of "grown by a liquid phase epitaxy process" is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

As to claim 19, the limitation of "said liquid phase epitaxy process utilizes a supersaturated solution comprising metallic antimony (Sb) and indium (In) as a solvent" is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

As to claim 20, the limitation of "*said Zn dopant is in an amount of 1/1000 to 1/10 by weight of a solvent of a supersaturated solution in the liquid phase epitaxy process*" is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

Further, *the amount of 1/1000 to 1/10 of Zn dopant* would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Furthermore, the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the

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chosen dimensions are critical. See *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

As to claim 21, the limitation of "*Zn dopant is in an amount 1/1000 to 1/10 by weight of Sb of the supersaturated solution in the liquid phase epitaxy process*" is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In *re Stephens* 145 USPQ 656 (CCPA 1965). Furthermore, *the amount of 1/1000 to 1/10 of Zn dopant* would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. In *re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Furthermore, the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. See *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

As to claim 22, Kimura et al discloses in figure 5b a structure of a LED device comprising: a LED substrate (20) having a GaP layer (10) thereon; a transparent layer ["(Zn-doped) GaP layer" 11] having Zn dopants therein on the GaP layer (10) (see col. 10, lines 55-60; col. 11, lines 54-67; and col. 12, lines 21-30). Applicant should note that: GaP is known as a transparent material (see col. 1, lines 60-61 in cited reference of Akaike et al (U.S. 6,528,823).

Kimura et al does not disclose the transparent layer is composed of a semiconductor compound excluding GaP.

Kopf et al (U.S. 5,115,441) discloses in figure 1 an apparatus having a transparent layer (23) composed of a semiconductor compound excluding GaP ("transparent semiconductor material ... is selected from the group consisting of cadmium tin oxide and indium tin oxide" that excludes GaP material, see claim 2). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kimura et al by replacing the transparent layer that is made of a material of a semiconductor compound excluding GaP as taught by Kopf et al for providing a desired conductivity, light transmissivity, and absorption range (see claim 1 in Kopf et al).

As to claim 23, Kimura et al discloses in figure 5b a structure of a LED device wherein the transparent layer (11) is formed by Liquid Phase Epitaxy process (see col. 11, lines 54-67). Further, the limitation of "*said transparent layer is formed by liquid phase epitaxy process utilizing a supersaturated solution comprising metallic antimony (Sb) and indium (In) as a solvent*" (emphasis added) is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

As to claim 24, the limitation of "*Zn dopant is in an amount 1/1000 to 1/10 by weight of a solvent of a supersaturated solution in the liquid phase epitaxy process*" is a process limitation in a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

As to claim 25, the limitation of "*Zn dopant is in an amount of 1/1000 to 1/10 by weight of Sb of the supersaturated solution in the liquid phase epitaxy process*" is a process limitation in

a product claim, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

Response to Arguments

3. Applicant's arguments with respect to claims 17, 22 and 23 have been considered but are moot in view of the new ground(s) of rejection. See the new ground of rejection as mentioned above.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TYT


Zandra V. Smith
Supervisory Patent Examiner
24 July 2006